will face higher prices than they currently do where standard AT&T tariffs (or other IXC offerings) are used. (pp. 30, 50) However, the BOC cellular carriers have a clear profit incentive to offer lower long distance prices to their customers. The BOCs cannot hope to monopolize or otherwise exercise market power in the interLATA long distance market. In the situation where the downstream market is competitive, it has long been known that the upstream firm will provide the downstream product at a competitive price to create the highest possible demand for the upstream product.[24] And this behavior is observed in cellular markets where cellular airtime is the upstream product and downstream services such as voice mail are often provided at marginal cost (or even below) to enhance demand for the upstream product.

3. Likely Future Competition for Cellular

27. Additional competition to cellular service is expected soon. On February 13, 1991 the FCC granted Fleet Call's request to allow it to use its specialized mobile radio (SMR) spectrum to offer digital Enhanced SMR (ESMR) in six cities, including New York. SMR was previously limited to a dispatch service; ESMR will provide service similar to cellular but ESMR will use the latest digital technology. The FCC has preempted state regulation to give the maximum competitive flexibility to ESMR providers. The president of Fleet Call stated that he expected the ESMR system to be useable both in vehicles and as portable equipment with features similar to PCNs.[25] I expect the FCC to allow other carriers to establish ESMR in other U.S. locations in the near

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[24] Thus, AT&T's claim that the BOCs want "to foreclose competition to mobile customers and to charge them supracompetitive prices for interexchange services" (pp. 50, 52) does not make economic sense if BOC cellular companies attempt to earn maximum profits in the absence of rate of return regulation. As discussed above no state uses rate of return or price cap regulation for cellular providers. AT&T's discussion of regulation and its effect on prices (p. 50, fn. 62) is wrong, but also irrelevant so long as price exceeds marginal cost for cellular and no overall regulation imposed profit constraint on cellular exists. Both of these conditions hold in every cellular market in the U.S.

[25] Telecommunications Reports, February 18, 1991, p. 7.

future.[26] ESMR will provide a close substitute to cellular service and will increase overall competition.

28. It seems very likely that Personal Communications Networks (PCNs) technology will be deployed in the U.S. over the next few years.[27] Three PCNs have been licensed in the U.K. (in 1989) with network construction currently underway, and the FCC has permitted experimental PCNs to begin operation in the U.S. While it is unclear what technological framework PCNs will use, I expect PCN users to be lighter and less expensive than current portable cellular units. They are likely to be connected to business PBXs in a convenient way and to provide a "universal" telephone number for each individual. Most responses to the FCC Notice Of Inquiry in the past year stated that PCNs will provide considerable competition to cellular carriers. The extremely high level of interest demonstrated in PCN by local exchange companies, IXCs, including AT&T, and cable TV companies demonstrates that market participants expect PCN to be an important near-future technology for wireless communications.

IV. MARKETS AT ISSUE

29. Will expanded BOC participation in cellular or paging markets lead to higher prices or reduced output in these or any other markets? Three markets might arguably be affected: paging markets and cellular markets themselves, or the market for interexchange toll service.

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[26] See Report, pp. 174-75.

[27] Personal Communications Network (PCN) is often used interchangeably with Personal Communications Service (PCS) in articles in the press. See Report, pp. 172-175.

A. Paging Markets

30. Paging service operators depend on local exchange companies (LEC) for message initiation. To send a paging message, I place a local phone call and use either the phone key pad to send a message or orally transmit a message that will be forwarded by the paging system. However, paging systems have used the local exchange network for decades, and over this time period BOCs and subsidiaries of RBOCs have been competitors along with non-BOC paging companies. While there have been some regulatory disputes, non-LEC paging companies have not plausibly claimed to have been disadvantaged by either discrimination or cross-subsidy by the BOCs. Indeed, the growth and success of non-BOC paging companies demonstrates that they have not been.

31. Paging markets have historically been primarily local in their geographic scope, but recent developments have created wider geographical markets for paging, e.g. the three nationwide paging frequencies allocated by the FCC along with numerous wide area paging services. BOCS have offered interexchange paging services since before the development of the nationwide paging services. The success of the new nationwide paging companies and the continued success of other non-BOC paging companies demonstrates that interLATA waivers, even general ones, have no negative effect on competition.

B. Cellular Markets

32. Cellular service operators also depend on the local exchange network. Originating or terminating calls to and from landline telephones are routed through the cellular switch, the MTSO. Cell sites are also sometimes connected through private line facilities provided by a LEC. The main regulatory dispute that existed after non-wireline cellular service began in 1985 was over interconnection terms and conditions between a cellular company and a LEC. However, these disputes have been largely resolved. Furthermore, even with respect to the regulatory disputes which have not been totally resolved, the non-BOC cellular carrier is <u>not</u> placed under any competitive

disadvantage since the terms and conditions are the same for both BOC-affiliated and unaffiliated cellular carriers within any MSA or RSA.

The success of many non-wireline cellular companies, e.g. McCaw, the largest U.S. cellular company, demonstrates that they have not suffered a competitive disadvantage because of their reliance on the local exchange network. Indeed, the two largest cellular telephone companies, McCaw and GTE/Contel, are both non-RBOC cellular companies with the majority of their systems in RBOC local exchange territories.[28]

33. Claims of cross-subsidization create an antitrust problem only when antitrust predation results. Predation occurs when one competitor sets price sufficiently far below marginal cost to cause other competitors to exit the market.[29] After competitors exit, the remaining firm increases its prices to the monopoly level.[30] For a predatory strategy to succeed, barriers to re-entry of the former competitors must exist and entry of new competitors must not occur so that the predating firm can earn back its losses from the predatory period by raising its prices to a monopoly level. As most economists and the courts have come to realize over the past decade, predatory strategies are very rarely encountered in actual business situations. Cross-

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[28] Sprint, in its opposition, states that it would have expected the RBOCs to exit from cellular markets if the equal access requirement were competitively important ("Opposition of Sprint", p. 9). Sprint ignores the competitive advantages, e.g. superior technological ability, which the RBOC cellular carriers bring to cellular markets. Sprint further objects to the possible use of a bidding process by the RBOCs for an IXC to provide cellular service. (p. 19) Basic economic theory demonstrates that a service provider always attempts to buy inputs at the lowest cost (not at higher prices as Sprint claims) which presumably would lead to lower revenues for companies like Sprint and lower cellular long distance prices for consumers. Sprint seems to forget that the antitrust laws are designed to protect consumers.

[29] The marginal cost of production is the cost of producing one more unit of a good or service. In telecommunications, the notion of marginal cost is sometimes replaced by incremental cost. However, the basic principles of pricing remain the same.

[30] Predation occurs only if competitors are actually forced to exit the market. Antitrust concerns do not arise merely because a given price is temporarily below marginal cost. Indeed, because of "introductory specials" or because of learning by doing, marginal costs may exceed price for a short period of time when a new product or service is introduced.

subsidy would be extremely difficult for BOC cellular affiliates because they are separate subsidiaries from the regulated local networks. Moreover, attempted predation would not be a rational business strategy for a BOC cellular company. Suppose hypothetically that the Block B (BOC) carrier succeeded in cross-subsidy of its downstream operations to the extent that the Block A carrier exited the market. As soon as the Block B carrier attempted to raise prices to the monopoly level, the Block A carrier would re-enter the market. And since customers can shift among carriers at very low cost, the customers gained during the predatory period would soon be lost if the Block B carrier attempted to charge above market prices. Thus, not only would the Block B carrier not get much new business, it would also lose much of its existing customer base. Furthermore, the Block B carrier would lose substantial amounts of money, which it could not subsequently recover, during the below-cost pricing period when it was forcing retailers and resellers to exit the market.

34. Another important economic factor that creates disincentives to cross-subsidize is the rapid growth of the cellular market. The number of cellular subscribers is growing at the rate of about 30-50% per year. Since the Block B carrier cannot prevent the Block A carrier from offering cellular service, the rapid growth prospects would cause the Block A carrier to re-enter when the Block B carrier raised its prices to non-competitive levels. A grant of the waiver would not change either the competitor's incentive or its ability to compete with the BOC-owned cellular provider.

35. In about 21% of the MSAs, the BOC owned cellular company operates outside its region, e.g. Pacific Telesis in Detroit or Atlanta, and another LEC provides landline telephone service. In these situations, the BOC affiliate has no ability to discriminate against its competitor.

36. Where the BOC provides both cellular service and landline telephone service, neither its incentive nor its ability to discriminate would be changed by permitting it to provide interLATA cellular service. Cellular competitors to the RBOCs have not been discriminated against nor have the RBOC cellular companies attained market power through discrimination or other anti-competitive strategies. Implications of discrimination or other anti-competitive theories should be: significantly higher prices charged by non-wireline carriers because of their higher costs, lower profits, lower growth rates, and lower market shares. Yet no evidence exists that any of these outcomes have occurred; see the price data in Appendix B. To the contrary, BOC competitors such as McCaw have expanded considerably so that McCaw is now the largest cellular company in the U.S. Indeed, McCaw and other non-BOC cellular companies have expanded at a considerably faster rate than the cellular industry as a whole.

C. Interexchange Toll Markets

37. In determining whether the proposed waiver could lead to RBOC exercise of market power in interexchange toll markets, the initial question is whether cellular telephone and landline telephone compete in the same product market.[31] According to the Department of Justice and Federal Trade Commission Horizontal Merger Guidelines (April 2, 1992, "MG") that question depends on whether a hypothetical, profit-maximizing firm not subject to price regulation could impose a "small but significant and nontransitory" increase in price.[32] ("MG", pgh. 1.1) It is, in fact, clear that a LEC could raise its price of landline service without losing customers to cellular service in

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[31] I conclude that paging and landline telephone service are not in the same antitrust market on the basis of similar reasoning. Paging is a complement to landline telephone service, not a substitute, given that its major use is as a one-way telecommunications service.

[32] AT&T's attempted use of a "submarket" definition (p. 35) is contrary to modern economic and antitrust analysis. Market definition is viewed as a method to analyze possible exercise of market power, and "submarkets" have no separate existence from market definition as found e.g. in the 1992 Merger Guidelines.

sufficient numbers to defeat the price increase. Indeed, this conclusion is one of the primary reasons why the price of landline telephone service continues to be regulated.[33] Alternatively, the price of landline telephone service does not constrain the price of cellular service. Thus, landline telephone and cellular are in different antitrust markets.[34] Furthermore, this situation will not change in a two year period which is the usual time period used by the DOJ in its MG antitrust analysis.[35]

38. To shed further light on the substitutability of cellular telephone service with either local or interexchange landline service, I gathered data on cellular telephone service prices in the 30 largest MSAs. I use the least expensive service plan in each MSA for the average customer's monthly usage of 160 minutes. The data are given in Appendix B. Note that the peak minute charges range from a low of $0.22 per minute in Milwaukee to a high of $0.60 per minute in New York City. An additional monthly fee (access) of between $10-86 per month is also charged. Long distance fees are typically added to

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[33] Thus, while all services might be said to compete to some degree, the market definition question is whether competition is sufficient to constrain a price increase. AT&T's claim of "actual" or "potential" competition (p. 10) totally ignores the crucial question of the amount of competition and its constraining influence on the market. AT&T's attempted use of a cost standard (pp. 59-60) instead of a price standard for analyzing competition is totally at variance with market definition in the MG and with correct economic analysis.

[34] I initially explained this conclusion to the DOJ in 1985 and testified before the California Public Utilities Commission on the subject in 1985-86. Despite claims to the contrary by numerous opponents of the RBOC motion, e.g. McCaw ("Comments of McCaw Cellular", pp. 34-40), I note that none have done an analysis of price constraining effects of cellular service on landline service, or vice versa.

[35] The Merger Guidelines considers only entry "that can be achieved within two years from initial planning to significant market impact." (MG, pgh. 3.2) AT&T's attempted use of a "someday" standard (p. 69) for potential entry and market definition extends considerably beyond the two year period of the Merger Guidelines. No one is claiming that cellular or other mobile telecommunications will have a significant impact on landline service within even a five year period and "someday" extends beyond a reasonable period for competitive analysis. AT&T's claim that significant competition currently exists (p. 58) is incorrect, but also inconsistent with its prior claim of a "shared monopoly" by cellular carriers. How can a shared monopoly exist unless a separate market for cellular exists?

the cellular per minute charge by the cellular provider. Thus, an interexchange call on a cellular telephone is considerably more expensive than the vast majority of landline interexchange calls even if no charge were made for the interexchange component of the call. For instance, the average per minute fee for a cellular call in my sample is about 50% more than the cost per minute for an average landline interLATA toll call. When the charge for the interexchange component is added to the cost of the cellular minutes, cellular toll is over twice the price of landline interexchange toll.[36] Thus, cellular interexchange calls do not compete significantly with landline interexchange toll calls.

39. Nor does cellular have the capacity to compete with landline service. In each MSA overall capacity is about 0.5 million cellular subscribers for the two service providers combined. Even with a change to digital cellular technology overall capacity will still not be a significant fraction of landline usage. Penetration of cellular is now in the range of 3-4% while penetration of landline telephone is about 95%.[37] Even the more optimistic forecasts for cellular penetration are only in the range of about 15-20% by the year 2000. Thus, neither supply nor demand conditions indicate that cellular will be an important substitute for landline telephone service now or in the foreseeable future.

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[36] An average MTS (switched) interLATA call, for quite long distances, costs between $0.20-0.25 per minute during peak periods. The same call placed on a cellular telephone will cost about $0.50-0.75 per minute. Higher usage landline non-switched toll services often have prices of less than $0.12 per minute for interexchange calls.

[37] Currently, cellular usage is less than 1% of landline telephone usage. The average landline access line uses about 1100 minutes of use per month (including local and toll calls based on Department of Commerce estimate, 1991 U.S. Industrial Outlook, p. 29-1) while the average cellular telephone is used about 160 minutes per month. Since there are over 20 times more landline access lines (140 million) than cellular subscribers (6.4 million according to the CTIA), cellular minutes of use equals about 0.6% of landline minutes of use.

40. Even if a BOC cellular company did have market power in a given cellular market, it would not make economic sense to attempt to "leverage" the market power into mobile long-distance services. First, since no BOC cellular company is subject to rate of return regulation, economic theory demonstrates that a hypothetical cellular company with market power has no incentive to seek a "second monopoly" in mobile or landline long distance services (or other competitive ancillary services) apart from special circumstances which do not exist in cellular markets.[38] Also, the BOC cellular company's rival in each mobile MSA or RSA could offer lower priced long distance service to attract customers to switch carriers.[39] Second, customer air time is the primary source of revenue for the cellular carrier. Long distance and other ancillary services are profitable mostly because they increase usage of

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[38] Since the interexchange component of mobile long distance service can always be provided by an IXC, a BOC cellular service company could never hope to gain a "monopoly" or market power in the downstream market since the IXCs cannot be affected (e.g. be induced to exit) by the actions of a given RBOC cellular company in any significant manner. Recently academic research has demonstrated that apart from forcing exit (or stopping entry), an upstream firm not subject to rate of return regulation with market power will not attempt to exercise market power in the downstream market. AT&T's repeated claims of attempted "foreclosure" by the BOCs fails to account for this basic economic fact. Attempted leverage would lead to decreased BOC cellular profits because a "foreclosure" strategy would create higher costs for the BOC cellular company since the IXCs have significant economies of scope in providing the interexchange component of mobile long distance service given their landline long distance service.

[39] Some opponents to the RBOC motion claim that cellular customers cannot easily shift carriers, e.g. ALC claims that customers are "captive on their cellular systems" ("ALC Opposition", p. 7) This claim is false. Almost all cellular telephones now operate on both Block A and Block B. While a customer who switches cellular providers will change telephone numbers, most cellular calls by far are outgoing calls. Furthermore, the very high churn rate of customers among carriers and resellers, with customers changing service at the rate of over 25% per year, according to 1991 CTIA estimates, demonstrates that customers do change service providers easily. The new number barrier to mobility has also been raised and rejected in state regulatory proceedings in which I have been a participant, e.g. North Carolina which recently decided to deregulate cellular. Sprint's "foreclosure" claim (p. 19) and its "bottleneck" claim for the cellular switch (p. 21) also depend on the claimed inability of cellular customers to switch providers ("Opposition of Sprint"). However, as shown above, actual data directly contradicts Sprint's claims.

cellular air time.[40]

41. A granting of the requested waiver could not possibly lead to effective cross-subsidy by an RBOC cellular company to predate in the interexchange long distance markets. Companies of the size of AT&T, MCI, and Sprint could not be affected by any predatory attempt by a BOC cellular company. The BOC cellular companies are extremely small compared to the IXCs. AT&T dwarfs even the combined landline and cellular operations of an individual RBOC.

42. Discrimination by BOC cellular affiliates against IXCs is also not a reasonable possibility. The most likely serving arrangement for interLATA cellular traffic handled by an IXC in medium to large MSAs will be the connection of the cellular switch, the MTSO, with an IXC POP though a high speed digital line (e.g. DS-1) or via a microwave link. Even where a MTSO does route interexchange traffic through the public switched network, it is inconceivable that a BOC would degrade all its switched access connections to an IXC so as to win some competitive edge in cellular interexchange toll services. Driving even a minuscule fraction of BOC business customers from switched access to special access long distance services (e.g. AT&T Megacom) accessed either via the BOC itself or a bypass provider (e.g. Teleport) would lead to overall decreased revenues and profits.[41] Cellular usage is far too

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[40] The competitive emphasis on local air time is demonstrated by the many cellular systems which offer toll-free calling across interexchange toll boundaries, Report pp. 158-160. Sprint misunderstands the complementary nature of information services, long distance services and other services with cellular service usage. ("Opposition of Sprint", pp. 13-15) Sprint's argument fails to explain why shopping malls offer "free parking" to shoppers. Sprint's further argument (p. 14) that RBOC cellular customers currently do not pay more for their long distance usage than if the equal access provision is not in place, also fails to consider bargaining power among long distance customers. As a customer of Sprint, I would gladly accept the long distance rates paid by their very largest customers.

[41] Since the vast majority of interLATA switched access revenue is regulated by the FCC which has instituted price cap regulation for the BOCs in place of rate of return regulation, the BOCs have the incentive to maximize profits from each of their services. Also, Megacom-type services are among

small compared to interexchange toll for discrimination to be a rational business strategy. There are at least 20 times more landline access lines than cellular phones.[42] BOC revenues in 1990 for switched access were about $13.5 billion while total cellular toll revenues in 1991 were about $0.5 billion, or only about 3.7% as large.[43]

43. Equal access regulations have been implemented and tested over the post-divestiture period so that regulatory controversies over the operation of equal access provisioning are largely settled. Thus, equal interconnection requirements at the level of the landline local exchange are sufficient to prevent BOCs from acting anti-competitively toward the non-BOC cellular companies or toward the IXCs. The BOC cellular companies cannot act anti-competitively through discrimination against either non-BOC cellular companies or the IXCs, because neither set of companies purchase anything from the BOC cellular companies. However, non-BOC cellular companies are not required to provide equal access to their customers for long distance calling. Thus, BOC cellular companies are placed at a regulatory disadvantage compared to their non-BOC competition. Regulatory disadvantages of this type result in a decrease in competition.

D. No Bottleneck Exists for Cellular Long Distance Service

44. For the BOCs to have the ability to affect competition adversely through discrimination, a necessary condition is that a "bottleneck facility"

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the fastest growing services of the IXCs.

[42] Even the 20 times factor is an underestimate since many business access lines are used by numerous telephones due to traffic aggregation which PBX's allow, e.g. the Department of Commerce (1991 U.S. Industrial Outlook, p. 29-1) estimates that there are 135 million local access lines and 243 million telephones.

[43] These switched access revenues include only interstate revenues. Inclusion of intrastate access revenues would increase the disparity even more. I use total cellular toll revenues, not just BOC cellular toll revenues, because of the difficulty in determining the BOC proportion of the total. Thus, the overall BOC percentage will be significantly smaller.

exist between a cellular facilities provider MTSO (switch) and an IXC POP. However, sufficient long distance traffic is generated by MTSOs in medium to large MSAs to make non-switched access from a MTSO to a POP to be economical so that the LEC switched access will typically not be used. Non-switched access can easily be provided without any dependence on BOC-provided special access services by facilities bypass, e.g. microwave facilities. Thus, no bottleneck exists because economical alternatives to BOC facilities exist for cellular long distance service.

45. Calculation of the size of a cellular company at which a change from switched to non-switched access becomes likely depends on a number of factors. I compared the cost of long distance access on the switched network to non-switched access using the average minutes per month of cellular users, 160 MOU, and an industry average of about 10% of minutes being minutes sent to IXC networks. I find that a cellular company with approximately 1600-6000 customers meets this standard.[44] Using the more conservative 6000 customer level and a 1992 penetration ratio of approximately 4% and assuming a 50-50 split between the 2 cellular carriers, I find that cellular carriers in all of the top 136 MSAs would find it economical not to rely on switched access. These top 136 MSAs account for over 86% of the total MSA population. By 1995, using an expected penetration of about 7.5%, I find that carriers in all of the top 209 MSAs, or over 94% of the total MSA population, would find non-switched access to be economical. Yet even this estimate is likely to be too low because the cost of non-switched access is decreasing markedly, and many cellular companies have combined their long distance access across MSAs, as will be described below. Thus, I would expect a large majority of cellular switches in both MSAs and RSAs to use non-switched access either currently or

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[44] This calculation uses Pacific Bell's interstate switched access charge to IXCs. The access charge includes only transport and averages about $0.0079 per minute. The lower switchover point, 1600 customers, occurs when a Competitive Access Provider's (CAP), e.g. Teleport, prices are used. The higher switchover point, 6000 customers, occurs when private facilities, e.g. microwave, are used. Currently in California, the CAPs are providing significant amounts of long distance access to cellular companies.

in the near future if they are permitted to do so through MFJ relief.

46. To investigate the actual dependence on BOC provided facilities, I interviewed two former employees of non-BOC cellular companies. Neither company depended on BOC facilities:

(1) CCI: Prior to the joint venture with Pacific Telesis, CCI served much of the state of Ohio from three MTSOs. The service area covered the cities of Cleveland, Akron, Canton, Columbus, Dayton, Mansfield, Hamilton, Springfield, Lorraine/Elyria, and Cincinnati. The MTSOs were connected via a private network with microwave as the primary means of transmission. For connection to its IXC POPs, CCI made no use of the BOC network--in two cases it used a fiber optic connection and in the other case it used microwave transmission. For many interLATA calls in Ohio a lower rate than the AT&T tariff was charged. All customers used the same IXC service with no choice offered to customers. CCI purchased its long distance service in bulk from the IXC.

(2) Detroit Cellular: Prior to its purchase by Pacific Telesis, Detroit Cellular provided inter-LATA services to its subscribers by the combined use of company owned microwave, local loop facilities from LECs, and inter-LATA facilities from IXCs. After the purchase of Detroit Cellular by Pacific Telesis, a waiver was granted to continue to provide the same services within the MSAs which received waivers: Detroit, Flint, Grand Rapids, Lansing, Muskegon, Saginaw, and Toledo (Ohio). Detroit Cellular uses a combination of leased fiber and microwave for its network and has replaced some BOC provided local loop circuits with leased cable TV fiber to IXCs' facilities.

E. Long Distance Service by Non-BOC Cellular Companies

47. I also investigated McCaw service in Florida. McCaw offers continuous coverage on the eastern side of Florida with service from the southern tip of the state, Key West, beyond Palm Beach and encompassing

central Florida. McCaw does not charge long distance fees for calls within Florida, but it does charge a roaming premium of between $0.25-0.34 minute depending on which plan is subscribed to by the customer. For interstate calls the long distance carrier is AT&T, and no choice of long distance carrier is provided to the customer.

48. Resellers who use BOC cellular networks to provide service also often do not provide a choice of a long distance carrier. As of June 1991 483 resellers were in business, an increase of over 100 from 1990 and 200 from 1989.[45] For instance, the cellular company which I use in Boston is a reseller on the NYNEX system. They provide long distance service through MCI, and my service representative informed me that no choice is available for long distance carriers. I surveyed cellular resellers in the Los Angeles and San Francisco MSA to find out how often they provided a choice of long distance carriers. Only 48% of the resellers offered a choice of long distance carriers despite the fact that equal access to long distance carriers was provided on the BOC cellular networks. Thus, resellers who use exactly the same physical facilities as the BOC cellular companies with whom they are in competition, find it unnecessary to offer equal access despite the fact that any customer can obtain equal access and identical cellular service by switching to a BOC agent for service. These survey data demonstrate a lack of customer demand for equal access provision of long distance service for their cellular usage.

F. Use of BOC Switches by Non-affiliated Cellular Companies

49. Non-BOC cellular companies have found it economically efficient to transport their cellular traffic to BOC cellular MTSOs where MFJ restrictions have not prohibited such an arrangement. Thus, a smaller cellular company is not required to purchase and operate its own MTSO. Instead, it may use a central BOC-operated MTSO as a cost saving measure much as CCI and Detroit

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[45] Based on Cellular Telecommunication Industry Association Data Survey.

Cellular did in the examples that I described above. To investigate the extent of non-BOC cellular company usage of BOC MTSOs, I gathered data from PacTel and Southwestern Bell Mobile Systems on their provision of switching services to non-BOC cellular companies. The results, given in Appendix D, demonstrates the importance of the use of BOC MTSOs in the provision of low cost cellular service to subscribers in lower population density RSAs.[46]

50. However, MFJ LATA restrictions have prohibited BOCs from providing centralized MTSO switching services for non-BOC companies in other low population density RSAs, without a cumbersome and expensive "back hauling" arrangement to deliver any interexchange traffic to interexchange carriers within the RSA. Examples from Southwestern Bell Mobile Systems where it was forced by MFJ restrictions to reject a request to provide cellular switching include: Texas 9B3 RSA, Texas 5B2 RSA, Texas 5 RSA, Texas 6 RSA, and Texas 8 RSA. Thus, the LATA restrictions, which were designed for landline long distance competition, have the effect of creating "first order" (or production) economic inefficiencies which means non-efficient use of society's productive resources. It is well known among economists that first order economic inefficiencies from regulation or other sources create the greatest type of loss to the U.S. economy.[47]

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[46] I also enclose additional Southwestern Bell Mobile System cellular companies which use a centralized MTSO to demonstrate the potential cost efficiencies which can be realized.

[47] For instance, P.A. Samuelson and W. Nordhaus state, "Efficiency is a central (perhaps the central) concern in economics. Efficiency means there is no waste." (Economics, McGraw Hill, 12th Edition, 1985, p. 28)

V. Pro-Competitive Effects of the Waiver

51. Approval of the waiver will not lead to increased prices or decreased output in any of the three relevant antitrust markets. Indeed, the opposite result of decreased prices and increased output is very likely to occur in cellular markets. Thus, the most likely effect of the wavier will be procompetitive.[48]

52. Numerous waivers have been granted in recognition of the market realities and competitive conditions, but the waiver process is very slow. Permitting RBOC cellular and paging companies to adapt more quickly to changing competitive conditions and changing technological conditions will lead to greater competition in cellular markets. The BOC cellular companies will be able to join the leaders in adoption of new services and technologies, rather than remaining followers which the current waiver process often requires. In technologically dynamic industries like cellular, the ability to innovate quickly ahead of a competitor is a powerful competitive incentive.

53. InterLATA boundaries do not correspond in any rational manner to the actual usage of either cellular telephone or paging. In about an hour's drive from my house in a Boston suburb I can go from the eastern Massachusetts LATA to 6 other LATAs--western Massachusetts, Rhode Island, Connecticut, New Hampshire, Maine, and Vermont. A BOC cellular provider must engineer its cellular network to account for the LATA boundaries while a non-BOC cellular provider can use a lower cost and more efficient design. Given the increasing importance of remote switches, significant cost savings can be obtained if remote switches can be combined with a main switch (called a cluster approach, Report pp. 97-124). The use of remote switches is becoming increasingly

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[48] Other elements of cellular competition such as coverage area, decreases in blocked calls, and customer service which have previously been important factors in competition among cellular companies will not be decreased in any way by the proposed waiver.

important as the RSAs (Rural Service Areas) are becoming operational, because the RSAs often lack sufficient population to make a stand alone MTSO economical.[49] Integration of cellular systems across LATA boundaries is thus becoming increasingly important. Restrictions on interLATA transport reduce the BOCs' ability to use remote switches and thus raise the cost and technical complexity of BOC cellular networks. Artificial obstacles to efficient design of the BOC cellular network simply decrease competition.

54. Non-BOC cellular companies, in particular McCaw, the largest cellular provider, have recognized the strategic advantages to the design of a seamless cellular network for people "on the go". (Report, pp. 105-116) Cellular service appeals primarily to mobile users; the ability to provide lower price roaming service and seamless intersystem handoffs as well as automatic call delivery are important competitive advantages. Allowing BOC cellular affiliates to provide interLATA service will put the BOCs in a position of competitive parity with their cellular rivals. Competition will be stronger when direct rivals, e.g. McCaw and an RBOC cellular company, are allowed to compete on equal terms without an artificial handicap on one of the competitors.[50]

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[49] A total of 306 MSAs have been licensed for cellular while 426 RSAs have been licensed to date. Thus, RSAs are an important source of cellular service since they include 25% of the U.S. population and over 80% of the interstate highway system. See Report, pp. 124-126. A number of non-RBOC cellular operators located in RSAs have filed motions in this proceeding favoring removal of the interLATA restrictions since they find it most economical (minimizing system costs) to use an RBOC cellular switch in an adjacent MSA or RSA, e.g. Comanche County Telephone Co..

[50] Unsurprisingly, McCaw objects to the ability of the RBOCs to provide these features "once the requested MFJ relief is granted". ("Comments of McCaw", pp. 32-33, also p. 51) McCaw's claims in this area again imply economic irrationality of the RBOCs. McCaw's claim that the RBOCs have an incentive not to cooperate in Block A systems ignores the substantial investment that RBOCs have made in non-wireline systems. For instance while PacTel Cellular is the Block B carrier in Los Angeles, San Diego, and some other California cities, Pactel also has ownership interests in the Block A carrier in San Francisco, Atlanta, Detroit, Dallas, and numerous cities in Ohio. Indeed, PacTel Cellular's overall total of approximately 35 million "pops" (population in cellular markets) is divided into 48.6% in Block A systems and 51.4% in Block B systems. These investments in Block A providers are worth over two billion dollars. PacTel clearly has the incentive to

55. Services will improve, costs will decline and prices will fall. The most likely arrangement for interexchange toll carried by an IXC will be a non-switched arrangement between the cellular MTSO and an IXC POP. The cellular system will thus qualify for high usage services such as AT&T Megacom. The price charged by AT&T for its Megacom service is about 62% of its usual MTS interexchange toll price. Competition will cause cellular providers to pass on most of the savings to their cellular customers. Even greater savings for cellular customers are likely. Cellular carriers may well qualify for a bulk purchase such as a Tariff 12 offering from AT&T or a similar contract from another IXC.[51] Reports in the telecommunications press indicate that savings of 40-50% from MTS toll prices could well be expected. Thus, two effects will follow from the waiver: increased economic efficiency and lower prices to consumers. Increased economic efficiency will occur because higher cost switched access from cellular MTSOs to IXCs' POPs will be replaced by lower cost non-switched access provided by LECs, competitive access providers, or by private facilities. Lower prices to consumers (and another source of increased economic efficiency) will occur because of the lower cost basis of long distance service, lower prices for the long distance component of the service, and increased competition by BOC and non-BOC cellular companies. I estimate that lower prices to BOC cellular customers will lead to consumer savings in the range of $150-250 million per year with an increase in consumer welfare (taking account of the price elasticity for long distance calls) of between $195-295 million per year. Thus, the cost to every cellular subscriber of not granting this waiver is between about $50 to $75 per year.

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maximize the value of these assets.

[51] All non-BOC cellular companies have adopted this strategy of bulk purchase from IXCs, c.f. Report pp. 163-164. No non-BOC cellular carrier offers a customer presubscription option.

JERRY A. HAUSMAN

Subscribed and sworn to before me
this 29 day of July, 1992

Notary Public
My Commission Expires 7/3/98

Appendix A

PRICE REGRESSION FOR TOP 30 CELLULAR MARKETS

Left Hand Side Variable: Log of Price[1]

Variable	Estimate	Standard Error
1. Intercept	1.74	0.57
2. Log of Income[2]	0.266	0.251
3. Log of Population[3]	0.100	0.052
4. Log of Commute Distance[4]	0.452	0.173
5. Regulation	0.165	0.050
6. Wireline	0.017	0.044
7. Both RBOC[5]	-0.118	0.057
Number of Observations	46	
Standard Error of Regression	.150	
R Squared	.536	

[1] Minimum monthly bill based on 128 minutes of peak calling and 32 minutes of off-peak calling.

[2] Log of per capita personal income. Source: DRI.

[3] Log of population. Source: DRI.

[4] Median distance from home to work (owner occupied housing units). Source: Dept. of Commerce, Annual Housing Survey.

[5] Dummy for both companies within a market being owned by RBOCs.

Appendix B

1991 CELLULAR SERVICE PRICES
30 LARGEST MSAs

City	Service Provider	MSA #	Minimum Bill	Monthly Fee	Per Minute Price		Free Minutes		
					Peak	Off-Peak	Unspecified	Peak	Off-Peak
New York	Metro One	1	$113.60	$32.00	$0.55	$0.35			
New York	NYNEX	1	124.60	35.00	0.60	0.40			
Los Angeles	Cellular One	2	111.24	45.00	0.45	0.27			
Los Angeles	PacTel Cellular	2	111.24	45.00	0.45	0.27			
Chicago	Cellular One	3	82.52	45.00	0.32	0.18	100		
Chicago	Ameritech	3	82.06	59.00	0.34	0.18	150		
Philadelphia	Metrophone	4	105.16	9.95	0.55	0.35			
Philadelphia	Bell Atlantic	4	78.00	44.00	0.50	0.30		60	90
Detroit	Cellular One	5	69.35	14.95	0.34	0.34			
Detroit	Ameritech	5	67.76	50.00	0.33	0.16	100		
Boston	Cellular One	6	82.40	59.00	0.42	0.27	100		
Boston	NYNEX	6	91.20	44.00	0.52	0.37		60	
San Francisco	Cellular One	7	109.00	45.00	0.45	0.20			
San Francisco	GTE Mobilnet	7	103.50	39.50	0.45	0.20			
Washington	Cellular One (SWBell)	8	70.82	39.95	0.49	0.29		65	65
Washington	Bell Atlantic	8	73.00	39.00	0.50	0.30		60	60
Dallas	MetroCel Cellular	9	91.64	35.00	0.38	0.25			
Dallas	Southwestern Bell	9	98.59	49.95	0.38	0.00			
Houston	Houston Cellular Tel Co	10	80.06	35.00	0.31	0.16			
Houston	GTE Mobile Comms	10	79.80	35.00	0.31	0.16			
St. Louis	CyberTel Cellular	11	84.47	40.95	0.34	0.22			300
St. Louis	Ameritech	11	74.56	24.00	0.34	0.22			
Miami	Cellular One	12	99.20	40.00	0.39	0.29			
Miami	BellSouth	12	81.48	35.00	0.39	0.10	20		
Pittsburgh	Cellular One	13	83.59	26.95	0.38	0.25			
Pittsburgh	Bell Atlantic	13	86.15	26.95	0.37	0.37			
Baltimore	Cellular One (SWBell)	14	70.82	39.95	0.49	0.29		65	65
Baltimore	Bell Atlantic	14	73.00	39.00	0.50	0.30		60	60
Minneapolis	Cellular One	15	77.19	26.95	0.36	0.13			
Minneapolis	USWest Cellular	15	79.47	19.95	0.44	0.10			
Cleveland	Cellular One	16	77.65	55.95	0.34	0.19	90		
Cleveland	GTE Mobilnet	16	46.46	30.00	0.36	0.20		100	
Atlanta	PacTel Cellular	17	86.84	35.00	0.35	0.22			
Atlanta	BellSouth	17	87.80	35.00	0.35	0.25			
San Diego	USWest Cellular	18	92.60	35.00	0.40	0.20			
San Diego	PacTel Cellular	18	92.60	35.00	0.40	0.20			
Denver	Cellular One	19	95.40	25.00	0.49	0.24			
Denver	USWest Cellular	19	97.07	19.95	0.54	0.25			
Seattle	Cellular One	20	86.00	86.00	0.38	0.20	180		
Seattle	USWest Cellular	20	102.59	29.95	0.49	0.31			
Milwaukee	Cellular One	21	54.24	42.00	0.22	0.14	100		
Milwaukee	Ameritech	21	57.24	45.00	0.22	0.14	100		
Tampa	Cellular One	22	87.99	32.95	0.38	0.20			
Tampa	GTE Mobilnet	22	88.15	20.95	0.47	0.22			
Cincinnati	Cellular One	23	72.65	50.95	0.34	0.19	90		
Cincinnati	Car Fone Comms	23	72.60	54.00	0.34	0.19	100		
Kansas City	Cellular One	24	65.20	50.00	0.34	0.16	110		
Kansas City	Southwestern Bell	24	57.95	35.00	0.30	0.15	75		
Buffalo	Cellular One-Buf Tel Co	25	55.00	55.00	0.34	0.27	180		
Buffalo	NYNEX	25	66.20	15.00	0.34	0.24			
Phoenix	Metro Mobile	26	73.55	69.95	0.39	0.24	150		
Phoenix	USWest Cellular	26	85.55	19.95	0.45	0.25			
San Jose	Cellular One	27	109.00	45.00	0.45	0.20			
San Jose	GTE Mobilnet	27	103.50	39.50	0.45	0.20			
Indianapolis	Cellular One	28	51.79	15.95	0.24	0.16			
Indianapolis	GTE Mobilnet	28	66.08	20.00	0.32	0.16			
New Orleans	Radiofone	29	72.80	50.00	0.38	0.38	100		
New Orleans	BellSouth	29	72.80	50.00	0.38	0.38	100		
Portland	Cellular One	30	67.40	15.00	0.29	0.29			
Portland	GTE Mobilnet	30	61.00	33.00	0.31	0.16	60		

Note: Monthly bill is based on 160 minutes usage (128 minutes peak, 32 minutes off-peak).

Appendix C

Comparison of BOC, Independent, and GTE Cellular Prices

Company Type	Mean	Median	Standard Deviation
BOC	$81.31	$78.00	$17.40
Independents	$84.41	$84.80	$14.64
GTE	$78.36	$79.80	$20.11

Appendix D: Non-BOC Cellular Company Usage of BOC MTSOs

I. PacTel Operated MTSOs

MTSO	Switching Provided For
Sacramento	Nevada 1 RSA Nevada 2 RSA Nevada 3 RSA
San Diego	California 7 RSA
Cincinnati	Indiana 6 RSA
Cleveland	Ohio 3 RSA
Oakland	Napa MSA Santa Rosa MSA
Santa Clara	Santa Cruz MSA

II. Southwestern Bell Mobile Systems (SBMS)

A. NON-SBMS Operated Cellular Systems which use A SBMS Switch

MTSO	Switching Provided For
Amarillo	Texas 1 RSA
Abilene	Texas 5 RSA Texas 8 RSA
San Antonio	Texas 15B2 RSA
Kansas City	Missouri 1 RSA Missouri 2 RSA Missouri 4 RSA
Oklahoma City	Enid MSA Oklahoma 2 RSA Oklahoma 5 RSA Oklahoma 6 RSA

B. SBMS Operated Cellular Systems

MTSO	Switching Provided For
Chicago	Indiana 1 RSA Indiana 2 RSA Illinois 2 RSA
Washington/Baltimore	Maryland 2 RSA Virginia 10 RSA Virginia 11 RSA Virginia 12 RSA West Virginia 4 RSA
Boston	Massachusetts 2 RSA New Hampshire 2 RSA (pending)

Dallas	Texas 6 RSA Texas 7B1 RSA Texas 9B1 RSA Texas 9B4 RSA Texas 10B1 RSA Sherman Texas MSA
St. Louis	Missouri 8 RSA Missouri 11 RSA Missouri 12 RSA Missouri 13 RSA Missouri 18 RSA Missouri 19 RSA
Kansas City	St. Joseph MSA Topeka MSA Lawrence MSA Kansas 5B2 RSA
San Antonio	Texas 18 RSA Texas 19 RSA Texas 20 RSA
Oklahoma City	Oklahoma 3 RSA Oklahoma 9 RSA
Amarillo	Texas 1 RSA
Champagne, IL	Decatur MSA Bloomington MSA Springfield MSA Illinois 2 RSA Illinois 5 RSA Illinois 6 RSA Illinois 7 RSA

CELLULAR Brief

CTIA®

March 26, 1993

CTIA's UPDATE ON KEY WIRELESS POLICY ISSUES

Cellular: Building for the Wireless Future

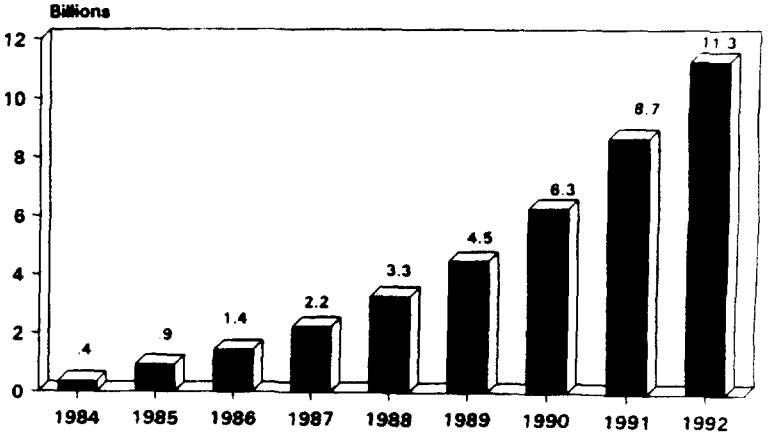
Cellular Sets New Records

The cellular telephone industry is a powerful engine, investing in the future, and bringing many benefits to the American people and economy. CTIA's latest data survey for 1992 underscores the rapid growth of the cellular industry over the past nine years. Last year the **number of cellular customers grew dramatically -- 46 percent** -- to reach more than 11 **million nationwide.** The survey also found that cellular carriers **added 8,000 new jobs** and invested another **$ 2.5 billion in new equipment** in 1992 alone.

Investment: Cellular companies invested $ 2.5 billion in new equipment in 1992, raising total capital investment to over 11 billion dollars.

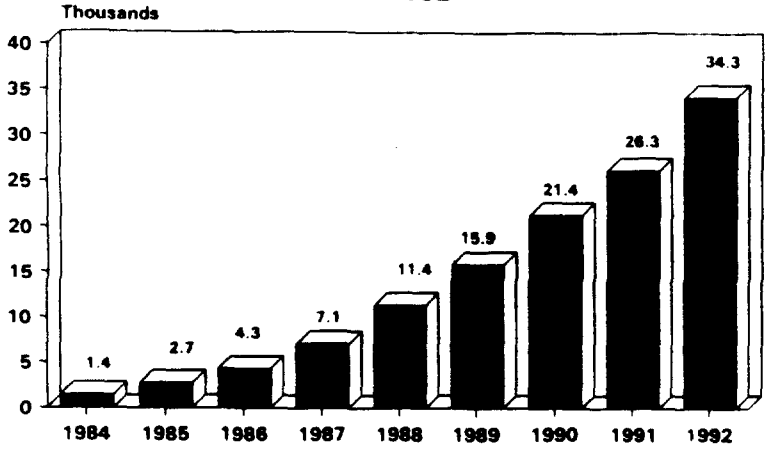
The number of cell sites, the basic building blocks of cellular systems, increased 31 percent, to total 10,307 -- bringing service to users in all 734 market areas nationwide. Each cell site costs $ 800,000 to $ 1,000,000.

CUMULATIVE CAPITAL INVESTMENT
1984 - 1992



Cellular companies -- both service providers and related manufacturers -- are investing in the future. Cellular companies are investing in the wireless infrastructure necessary to support an increasingly mobile society, and manufacturers are investing in the development of new technologies and applications for wireless products.

CELLULAR COMPANY EMPLOYEES
1984 - 1992



Jobs: Cellular companies added 8,000 new jobs in 1992, increasing the number of direct employees to over 34,000, and bolstering to over 100,000 the jobs in related industries.

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